

SANYO**LA6564H****4CH Bridge (BTL) Driver for CD-R****Overview**

The LA6564H is a 4-channel BTL driver developed for CD-ROM/R/RW and DVD-ROM actuator.

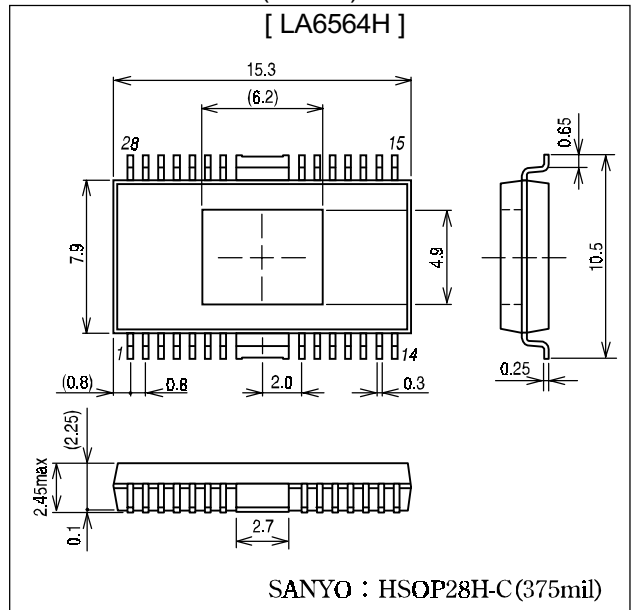
Functions

- Three power supply systems (with a separate preamplifier stage).
- Four bridge-connection (BTL) power amps built-in.
- I_O max : 1A.
- Mute circuit (output ON/OFF) built-in. With three systems (2-1-1).
- Provides output voltage setting pin (for 4CH only).

Package Dimensions

unit : mm

3234A-HSOP28H-C (375mil)

**Specifications**Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Rated Values	Unit
Supply voltage 1	V_{CC} max	*1	14	V
Supply voltage 2	V_S max	*1	14	V
Allowable power dissipation	P_d max	Independent IC	0.82	W
		A specified substrate (114.3mm×76.1mm×1.6mm/glass epoxy)	2	W
Maximum input voltage	V_{INB}		13	V
Mute pin voltage	V_{MUTE}		13	V
Maximum output current	I_O max	Each output	1	A
Operating temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

*1 Note : $V_{CC} \geq V_S$ *

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Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	V_{CC}	$V_{CC} \text{ *1}$	4 to 13.5	V
Supply voltage 2	VS	VS 1,2,3 *1	4 to 13.5	V

1 Note : $V_{CC} \geq VS^$

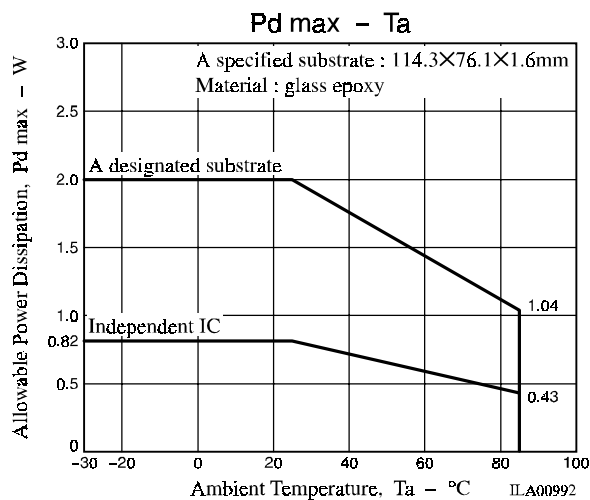
Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $VS1 = VS2 = 5\text{V}$, $VS3 = 12\text{V}$, $V_{REF} = 1.65\text{V}$, unless otherwise specified

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[All Blocks]						
V_{CC} no-load current drain	I_{CC-ON}	V_{CC} current, all outputs ON (all MUTE : H)		20	30	mA
No-load current drain OFF	I_{CC-OFF}	Total current of V_{CC} and VS1 through 3 (All MUTE : L)			0.5	mA
[Output AMP Block]						
Output offset voltage	VOFF	Between + and - outputs of each CH	-50		50	mV
Output voltage 1	V_{O1}	$R_L = 8\Omega$, voltage between outputs of CH1 through CH3 *1	4	4.5		V
Output voltage 2	V_{O2}	$R_L = 16\Omega$, voltage between outputs of CH4 *1	10.5	11		V
Closed-circuit voltage gain 1	VG1	CH1,2,3, input and output gain	10	12	14	dB
Closed-circuit voltage gain 2	VG2	CH4, input and output gain	16	18	20	B
Input voltage range	V_{IN}	Each input pin	0		VS^*	V
Slew rate	SR	Independent AMP. Doubled when between outputs.		0.5		V/ μs
[MUTE Block]						
MUTE ON voltage	VMUTE-ON	MUTE *2	2			V
MUTE OFF voltage	VMUTE-OFF	MUTE *2			0.5	V
MUTE pin inrush current	I-MUTE	Inrush current of each MUTE pin		25	50	μA
[AREF AMP Block]						
V_{REF-IN} input voltage range			1		$V_{CC}-1.5$	V
[Voltage limiter block] [Setting the limit value of CH4 output voltage]						
V_{O-SET} input and output gain	G- V_{OSET}	*1	11	12	13	dB
V_{O-SET} input current	I- V_{OSET}	V_{O-SET} : current at 3.3 V			1	μA

*1. Output saturated.

*2. MUTE output ON with HI and OFF with LOW (High impedance with AMP output OFF).

MUTE operates independently for each CH (Refer to "Relationship of MUTE and output" described later).



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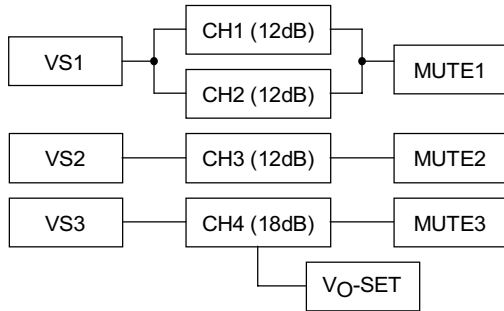
1) Relation ship of MUTE and output

	Output			
	CH1	CH2	CH3	CH4
Each MUTE	MUTE1		MUTE2	MUTE3
H	ON			
L	OFF			

*1 The output becomes HI impedance when it is OFF.

*2 MUTE operates independently for each CH (Refer to the following description). All MUTES enter the STBY mode when they are L (output OFF), turning OFF all the circuits including the output AMP.

2) Relationship between each CH and V*, MUTE



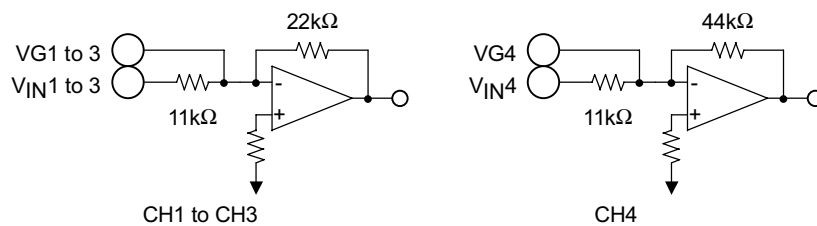
3) V_O-SET

V_O-SET operates for CH4. V_O-SET is correlated to CH4 output by 12dB. For example, the output is 4V when V_O-SET is 1V.

4) Gain set (V_{IN}* and V_G*)

Gain of each CH can be equivalently represented as follows :

- CH1 to CH3 : 12dB, CH4 : 18dB when only V_{IN} pin is used. The similar gain is obtained also when a 11k resistor is used for the V_G* pin and the input is provided from its resistor end.
- The input/output gain is determined from the resistance ratio as shown in the figure below. To set the gain with the V_G pin, the input-output gain has a slight temperature characteristic depending on the difference in temperature characteristic between internal and external resistances.



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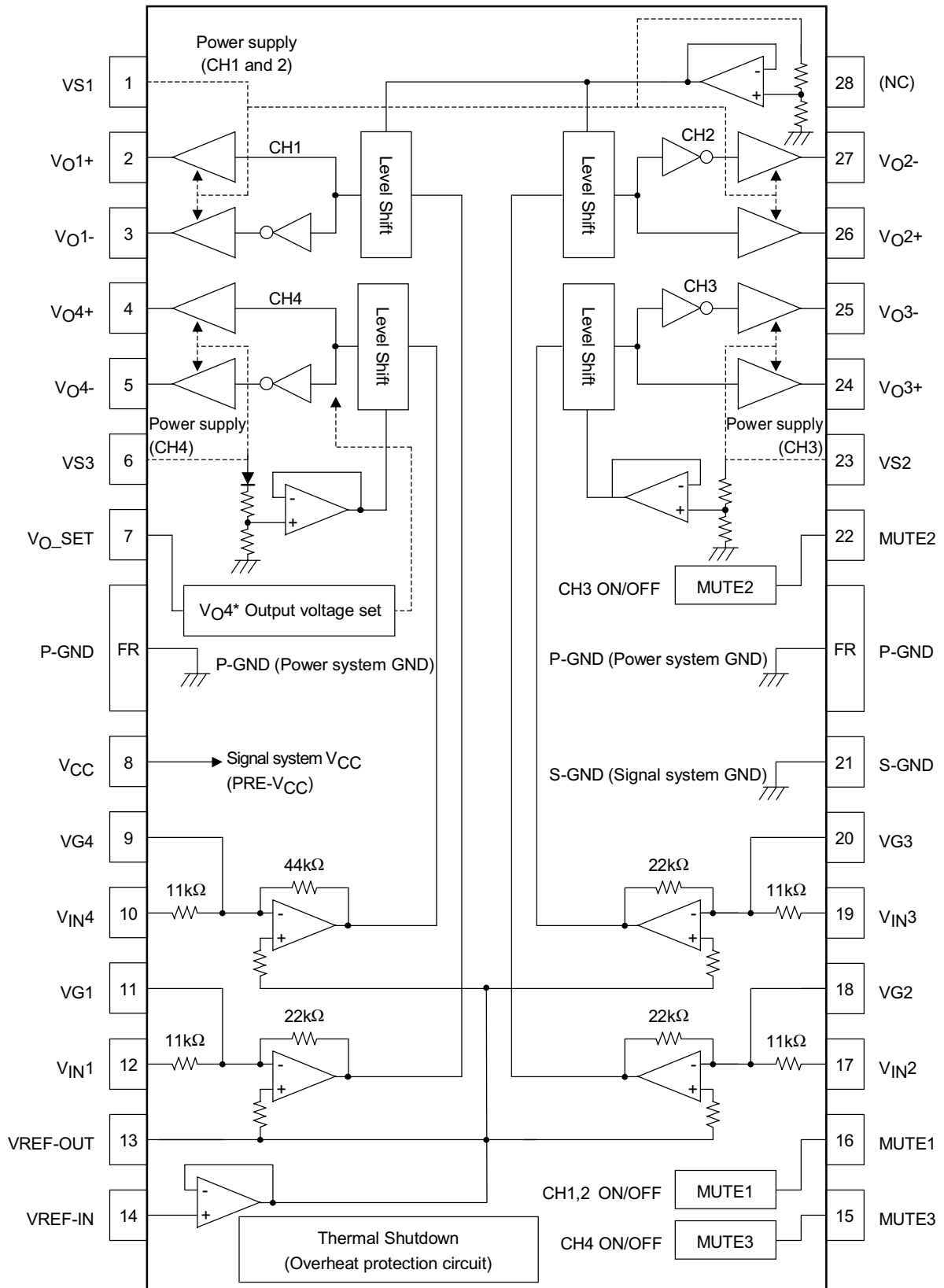
Pin Functions

Pin No.	Pin Name	Description (Functions)
1	VS1	Output stage power supply for channel 1 and 2
2	VO1+	Output pin (+) for channel 1, non-inverted output for channel 1 input
3	VO1-	Output pin (-) for channel 1, inverted output for channel 1 input
4	VO4+	Output pin (+) for channel 4, non-inverted output for channel 4 input
5	VO4-	Output pin (-) for channel 4, inverted output for channel 4 input
6	VS3	Output stage power supply for channel 4
7	VO_SET	Pin to adjust channel 4 output voltage
8	VCC	Power supply for preamplifier stage signal system
9	VG4	Input pin for channel 4 (for gain adjustment)
10	VIN4	Input pin for channel 4
11	VG1	Input pin for channel 1 (for gain adjustment)
12	VIN1	Input pin for channel 1
13	VREF-OUT	VREF-AMP output
14	VREF-IN	Reference voltage input pin
15	MUTE3	ON/OFF for channel 4 output
16	MUTE1	ON/OFF for channel 1 and 2 outputs
17	VIN2	Input pin for channel 2
18	VG2	Input pin for channel 2 (for gain adjustment)
19	VIN3	Input pin for channel 3
20	VG3	Input pin for channel 3 (for gain adjustment)
21	S-GND	Signal system GND
22	MUTE2	ON/OFF for channel 3 output
23	VS2	Output stage power supply for channel 3
24	VO3+	Output pin (+) for channel 3, non-inverted output for channel 3 input
25	VO3-	Output pin (-) for channel 3, inverted output for channel 3 input
26	VO2+	Output pin (+) for channel 2, non-inverted output for channel 2 input
27	VO2-	Output pin (-) for channel 2, inverted output for channel 2 input
28	(NC)	Do not use

* Center frame (FR) becomes GND for the power system (P-GND). Set this to the minimum potential together with S-GND.

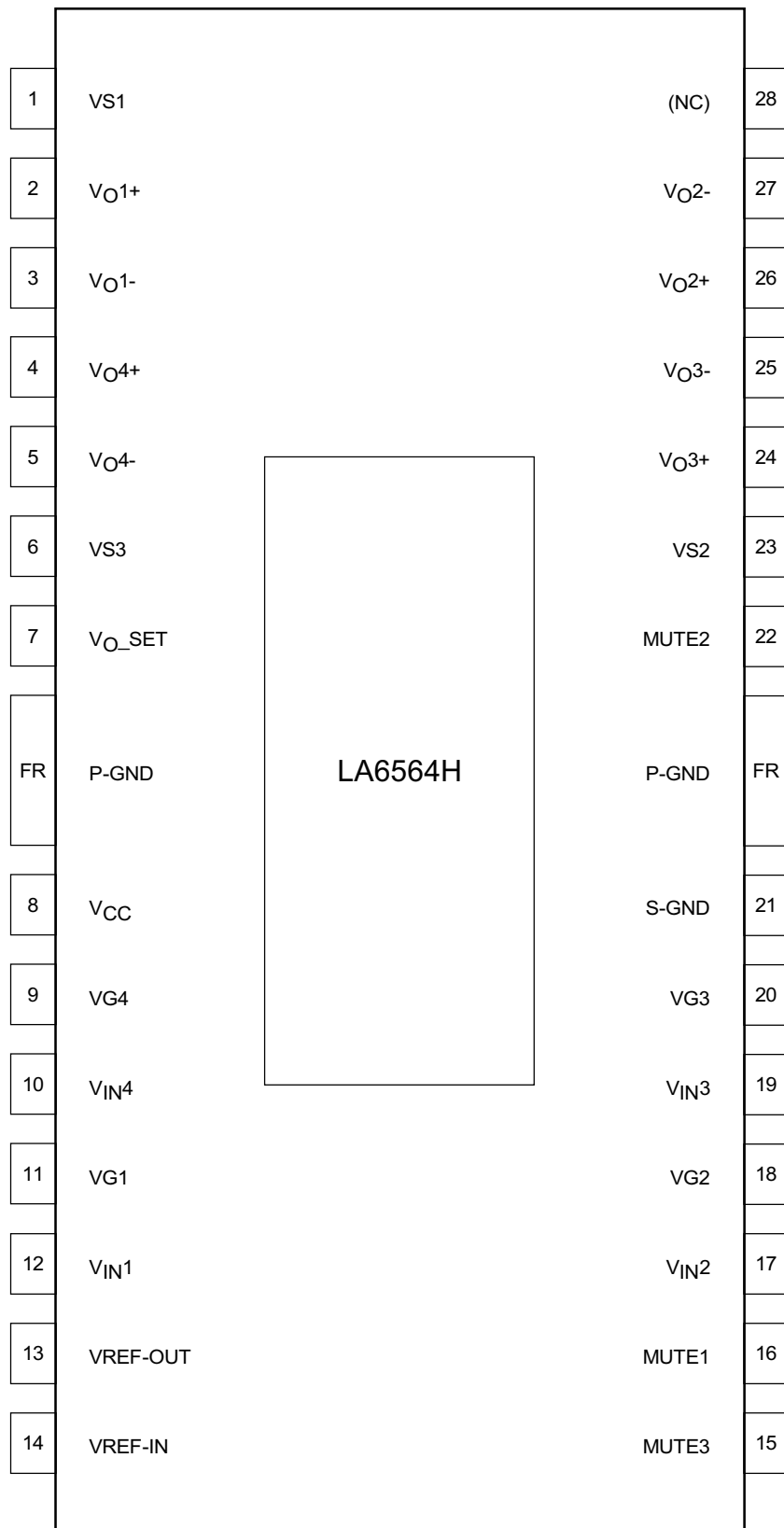
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Block Diagram



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Pin Assignment



Top view

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Pin Description

Name	Pin Name	Pin No.	Equivalent Circuit Diagram	Description
Input	V _{IN1} V _{IN2} V _{IN3} V _{IN4} VG1 VG2 VG3 VG4	12 17 19 10 11 18 20 9		Input pins
Output	V _{O1+} V _{O1-} V _{O2+} V _{O2-} V _{O3+} V _{O3-} V _{O4+} V _{O4-}	2 3 26 27 24 25 4 5		Output pins
MUTE	MUTE1 MUTE2 MUTE3	16 22 15		Switch for each channel output MUTE : H output ON MUTE : L output OFF

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